

ABSTRACT

A laser device includes a target position, an optical component separated a distance J from the target position, and a laser energy source separated a distance H from the optical component, distance H being greater than distance J . A laser source manipulation mechanism exhibits a mechanical resolution of positioning the laser source. The mechanical resolution is less than a spatial resolution of laser energy at the target position as directed through the optical component. A vertical and a lateral index that intersect at an origin can be defined for the optical component. The manipulation mechanism can auto align laser aim through the origin during laser source motion. The laser source manipulation mechanism can include a mechanical index. The mechanical index can include a pivot point for laser source lateral motion and a reference point for laser source vertical motion. The target position can be located within an adverse environment including at least one of a high magnetic field, a vacuum system, a high pressure system, and a hazardous zone. The laser source and an electro-mechanical part of the manipulation mechanism can be located outside the adverse environment. The manipulation mechanism can include a Peaucellier linkage.